CHAPTER 6

NOISE ELEMENT

Purpose

Noise is “unwanted sound” and is known to have several adverse effects on people. The known effects include hearing loss (not generally a factor with community noise), communication interference, sleep interference, physiological responses and annoyance. The Noise Element provides an understanding of existing and future noise conditions in the Planning Area, establishes a basis for evaluating potential noise level impacts on future development, and includes policy statements to guide public and private planning to attain and maintain acceptable noise levels. Implementation of the Noise Element will promote a comprehensive and long range program of achieving acceptable noise levels throughout the Planning Area. Quantitative information in the Element includes maps showing present and future noise levels.

Relationship to Other Elements

Traffic is one of the major Planning Area noise sources, and noise contours are based on existing and projected traffic volumes on the planned street system. As projected traffic volumes are directly related to planned land uses, the Noise Element is also closely related to the Land Use Element.

6.1 Noise Measurement and Compatibility Standards

Noise Measurement

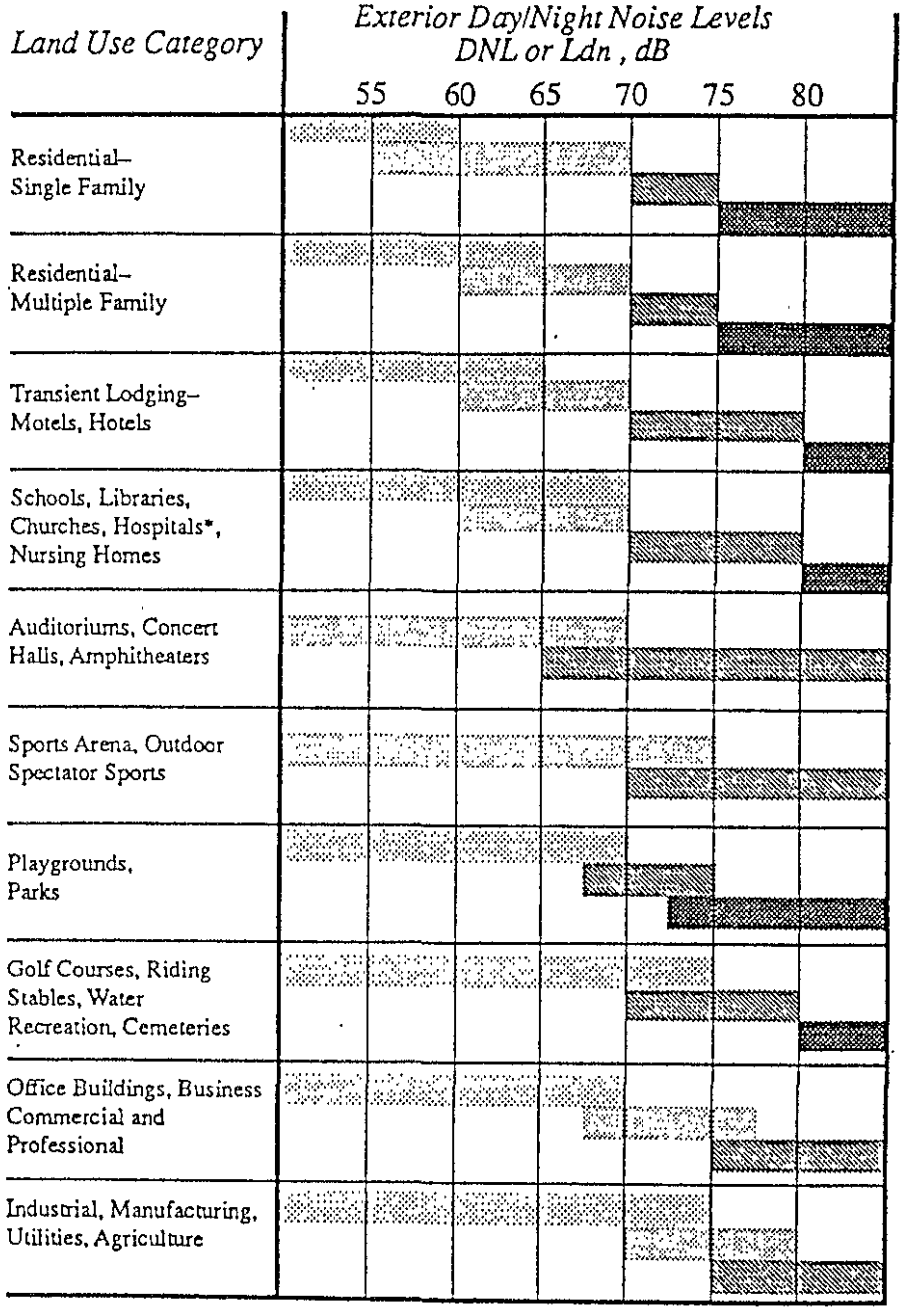
For planning purposes, a weighted scale is used to describe environmental noise at any one particular time; however, community noise levels vary continuously. In order to account for the time-varying characteristics of noise, all of the individual noise readings must be averaged over a 24-hour period to give an equivalent level. This equivalent noise level, expressed as Day-Night Noise Level (DNL or Ldn) or Community Noise Equivalent Level (CNEL, normally within 0.5 dB of the DNL value) can then be plotted on a map to illustrate average noise levels throughout the community. The DNL used in this Element represents a sound level that is equivalent to the total varying sound levels that occur over a 24 -hour period **plus** a 10 decibel (dB) penalty for nighttime noise (i.e. between 10 PM and 7 AM).

In establishing noise contours for land use planning, it is customary to ignore the noise attenuation afforded by man-made structures, roadway elevations, and depressions, and to minimize the barrier effects of natural terrain features. Thus, noise contours provide a conservative estimate of the future noise environment. The purpose of the contours is to identify the potential need for more detailed acoustical analyses, not to precisely predict noise levels. It is preferable to overestimate the potential noise at a future sensitive development site, rather than underestimate the noise environment and allow for potentially incompatible land use development. Man-made barriers, such as buildings, may be removed as a part of development, thereby providing no future noise attenuation.

Noise Compatibility Standards

Based on the known effects of noise, criteria have been established to help protect public health and safety and prevent disruption of certain human activities. The City's noise compatibility standards are derived from guidelines published by the California Office of Planning and Research, and are shown in Table 6-1. They match different land uses with an appropriate range of noise levels. These standards should be used in conjunction with noise exposure contours shown on the noise map (Figures 6-1 Existing Noise, and 6-2, Future Noise) to determine where noise levels exceed the "normally acceptable" range and an acoustic report and noise mitigation is required for development projects.

Table 6-1
Land Use Compatibility for Community Noise Environments



INTERPRETATION

Normally Acceptable:
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design.

Normally Unacceptable:
New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable:
New construction or development clearly should not be undertaken.

Source: Office of Planning and Research, State of California General Plan Guidelines, Appendix A: Guidelines for the Preparation and Content of the Noise Element of the General Plan, 1990.

*Because hospitals are often designed and constructed with high noise insulation properties, it is possible for them to be satisfactorily located in noisier areas.

6.2 Existing and Projected Noise

A community noise survey was conducted for the General Plan to document noise exposure in areas containing noise sensitive land uses, such as residential areas, parks and schools. Noise monitoring sites were selected to be representative of typical conditions in the Planning Area. Details of survey are in Appendix D of the Plan.

Noise Contours

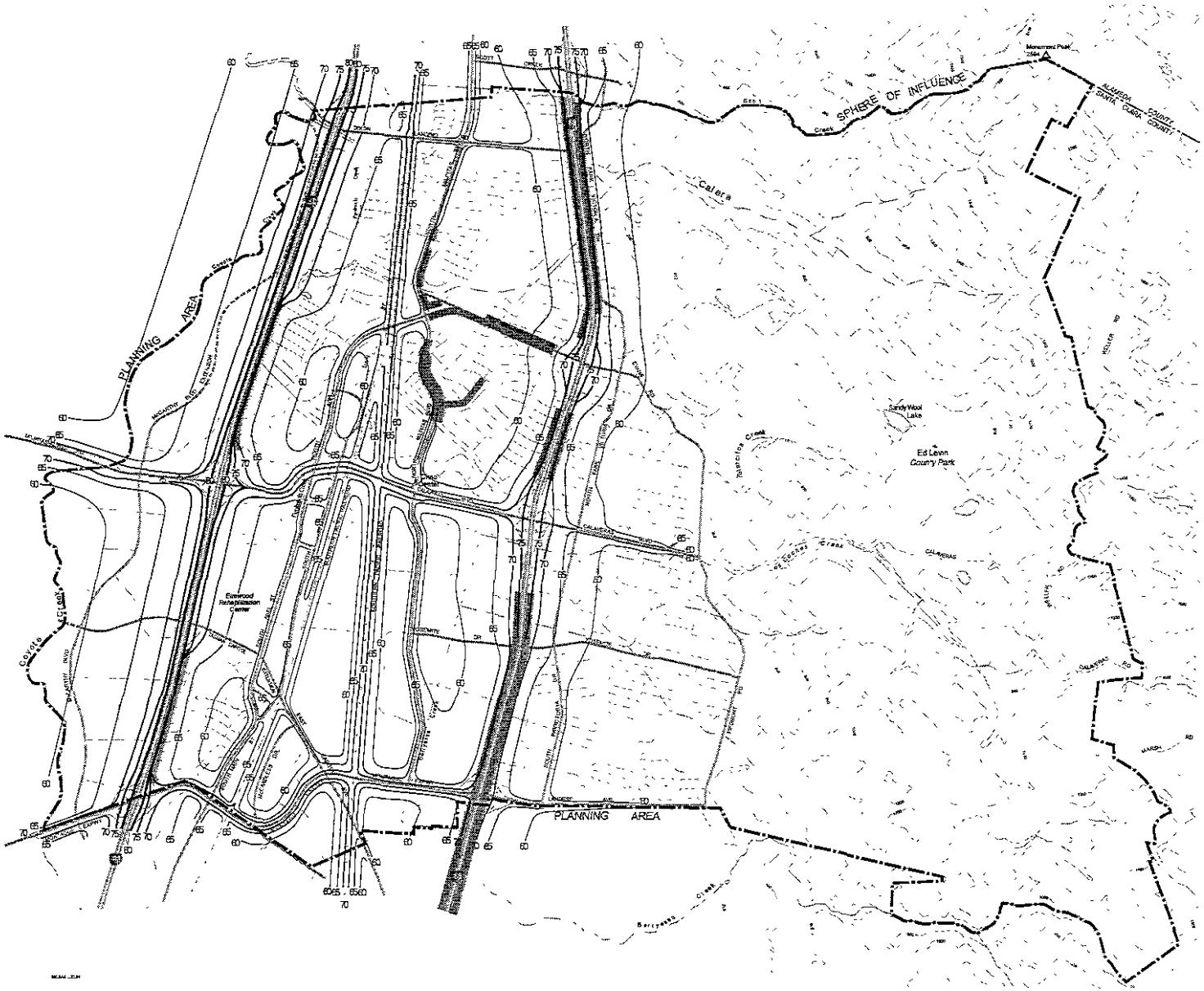
In addition to the noise survey, noise contour maps were produced for the Planning Area. A "noise contour map" shows as closed lines those linear bands subject to similar average noise levels. Figure 6-1 shows existing noise levels in the Planning Area, based on noise studies conducted in 1988. The noise survey conducted for the General Plan in November and December 1993 confirms that current (1993-94) noise levels have not changed substantially since 1988. Figure 6-2 depicts projected 2010 noise levels (based on projected traffic volumes). The noise levels in these maps are expressed in DNL.

Contours along roadways represent the predicted noise level and do not reflect the mitigating effects of noise barriers, structures, topography, or vegetation. Because intervening structures, topography, and vegetation may significantly affect noise exposure at a particular location, the noise contours should not be considered site-specific, but rather are guides to determine when detailed acoustic analysis should be undertaken.

Principal Noise Sources in the Planning Area

Traffic and the railroads are the principal noise sources in the Planning Area. Sporadic noise from aircraft and construction-related activities also contributes to the noise environment in the Planning Area. Further detail on the existing noise environment in the Planning Area is included in Appendix D.

Existing Noise
Figure 6-1



Year 1988 Noise Contours

- 60 dbL
- 65 dbL
- 70 dbL
- 75 dbL
- 80 dbL

Barrier/depressed roadway

Source: Charles M Salter Associates, Inc., 1994

10 acres

0 1000' 2600' 1 MILE

City of Milpitas
GENERAL PLAN

July 1997

Future Noise
Figure 6-2

Year 2010 Noise Contours

- 60 dbL
- 65 dbL
- 70 dbL
- 75 dbL
- 80 dbL

Barrier/depressed roadway

Source. Charles M. Salter Associates, Inc., 1994

10 acres

0 1000' 2600' 1 MILE

City of Milpitas
GENERAL PLAN

July 1997

6.3 Noise Mitigation

The preferred method of mitigating noise is controlling it at source and separating sensitive receptors and noise sources. Mitigation measures generally fall into two general categories: physical and regulatory. Physical measures include enclosing the noise source, substitution of a quieter noise source, or use of a noise barrier. Regulatory measures, on the other hand, reduce noise exposure by limiting operation of the noise source or by regulating locations where it may be used. Generally, physical measures reduce the level of noise produced, whereas regulatory measures limit the duration of the noise, thereby reducing noise exposure.

Physical mitigation measures for traffic noise are construction of sound walls along noise-sensitive areas, use of earth berms and revetments, and routing of new roads to circumvent noise-sensitive areas. Administrative regulation of traffic noise includes restricting truck access routes, enforcement of speed limits, and enforcement of state vehicle noise emission standards.

For new construction, noise control should be incorporated into the design of projects. Specific recommendations depend upon the type of construction, character of the noise exposure, and degree of noise reduction required for interior and outdoor areas.

6.4 Noise Principles and Policies

Guiding Principles

6-G-1 Maintain land use compatibility with noise levels similar to those set by State guidelines.

6-G-2 Minimize unnecessary, annoying, or injurious noise.

Implementing Policies

Uses and Standards

6-I-1 Use the guidelines in Table 6-1 (Noise and Land Use Compatibility) as review criteria for development projects.

6-I-2 Require an acoustical analysis for projects located within a "conditionally acceptable" or "normally unacceptable" exterior noise exposure area. Require mitigation measures to reduce noise to acceptable levels.

6-I-3 Prohibit new construction where the exterior noise exposure is considered "clearly unacceptable" for the use proposed.

6-I-4 Where actual or projected rear yard and exterior common open space noise exposure exceeds the “normally acceptable” levels for new single-family and multifamily residential projects, use mitigation measures to reduce sound levels in those areas to acceptable levels.

6-I-5 All new residential development (single family and multifamily) and lodging facilities must have interior noise levels of 45 dB DNL or less. Mechanical ventilation will be required where use of windows for ventilation will result in higher than 45 dB DNL interior noise levels.

6-I-6 Assist in enforcing compliance with noise emissions standards for all types of vehicles, established by the California Vehicle Code and by federal regulations, through coordination with the Milpitas Police Department, Santa Clara County Sheriff's Department, and the California Highway Patrol.

The most efficient and effective means of controlling noise from transportation systems is reducing noise at the source. However, the City has little direct control over transportation source noise levels because of sate and federal preemption (e.g. State Motor Vehicle Noise Standards). Therefore, requiring compliance with State and federal agency standards is the best approach.

6-I-7 Avoid residential DNL exposure increases of more than 3 dB or more than 65 dB at the property line, whichever is more restrictive.

Noise Monitoring and Updating

6-I-8 Biennially monitor 24-hour noise exposure at two locations, and shorter-duration exposure at six additional locations in the Planning Area.

The next monitoring should be conducted by summer 1996. The locations will be selected by the Community Development Department in response to community concerns.

6-I-9 Enforce the provisions of the City of Milpitas Noise Ordinance and the use of established truck routes.

Methods of Attenuation

6-I-10 Reduce the noise impact in existing residential areas where feasible. Noise mitigation measures should be implemented with the cost shared by public and private agencies and individuals.

6-I-11 Minimize noise impacts on neighbors caused by commercial and industrial projects.

6-I-12 New noise-producing facilities introduced near sensitive land uses which may increase noise levels in excess of "acceptable" levels will be evaluated for impact prior to approval; adequate mitigation at the noise source will be required to protect noise-sensitive land uses.

6-I-13 Restrict the hours of operation, technique, and equipment used in all public and private construction activities to minimize noise impact. Include noise specifications in requests for bids and equipment information.

6-I-14 City streets will be designed to reduce noise levels to adjacent areas. This is most effectively implemented through traffic engineering to prevent residential streets from becoming rush-hour thoroughfares, and through enforcement of speed limits. Physical mitigation measures, such as sound walls, will also be considered, where appropriate.

6-I-15 Promote installation of noise barriers along highways and the railroad corridor where substantial land uses of high sensitivity are impacted by unacceptable noise levels.

Coordination with Other Agencies

6-I-16 Work with Caltrans and other agencies on traffic and railroad noise issues and participate in appropriate noise mitigation programs.